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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,344	04/01/2004	Yoshiaki Sakagami	59406.00016	5350

32294 7590 07/06/2009

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EXAMINER	
RICE, ELISA M	
ART UNIT	PAPER NUMBER
2624	
MAIL DATE	DELIVERY MODE
07/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,344	SAKAGAMI ET AL.	
	Examiner	Art Unit	
	ELISA M. RICE	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's Argument:

Applicants respectfully submit that Higaki, Kuno, and Ishii, whether considered individually or in combination, fail to disclose, teach, or suggest, all of the elements of the present claims. For example, the combination of Higaki, Kuno, and Ishii fails to disclose, teach, or suggest, at least, "the image transmitting means transmitting the monitored state variables in addition to the cut outface image," as recited in independent claims 1 and 10.

Examiner's Response:

See second and fourth Examiner's Reply below.

Applicant's Argument:

The Office Action alleged that col. 5, lines 10-15 of Ishii disclose the aforementioned limitation of independent claims 1 and 10. (See e.g. Office Action at pages 5-6). The cited portion of Ishii discusses that the information captured through the image sensor 11 of the robot 10 is used for the purpose of detecting a current position of the robot 10, in order for the robot 10 to move around all objects to be monitored or to monitor a specified object. The cited portion further discusses that the information

captured through the image sensor 11 is transferred externally through a communication device 19 of the robot 10, and stored in an external device. (See Ishii at col. 5, lines 9-16). Contrary to the Office Action's position, the information captured through the image sensor 11 does not disclose, or suggest, state variables comprising a current position of the robot. Instead, as discussed in Ishii, the information captured through image sensor is the underlying image data picked up by the image sensor 11. (See Ishii at col. 3, lines 36-37).

Examiner's Response:

The communication device is an image transmitting means in that it transmits image, audio and/or other information to an external device. In addition, the image display device such as an information terminal is also an image transmitting means and it also provides information about the current position of the robot if it is to be any use in the collection of the monitoring information for managing a wide space used by many and unspecified person as discussed in column 5, lines 40-42. The image display device of Ishii must by its very nature transmit changing information regarding the current position of the robot in a widely monitored space and relay this information to the user in the way of images.

Applicant's Argument:

Applicants respectfully submit the Office Action is taking the phrase "information captured through the image sensor 11 of the robot 10 is used for the purpose of detecting a current position of the robot 10" of Ishii out of context. It is clear from the discussion of Ishii that the information processing device 14 uses the image data of the image sensor 11 and the GPS function to determine a current position of the robot 10. (See Ishii at col. 3, lines 33 - 48). Thus, the image data of the image sensor 11, by itself, does not determine a current position of the robot, and thus, cannot be considered a monitored state variable comprising a current position of the robot. Because the image data of the image sensor 11 cannot be considered a monitored state variable comprising a current position of the robot, the discussion of transferring information captured through the image sensor 11 to an external device in Ishii, does not disclose, or suggest, transmitting monitored state variables in addition to a cut out face image, where the monitored state variables comprise a current position of the robot.

Examiner's Response:

The claim limitations of claim 1 do not require that an image sensor determine a current position of the robot as seemingly suggested above. Instead, the claimed recitation of claim 1 simply requires "means for monitoring state variables comprising a current position of the robot."

Applicant's Argument:

Furthermore, while the robot 10 may detect a current position by using the GPS function, there is no disclosure in Ishii that the robot 10 transmits this information. As discussed in Ishii, the obtained position information is used by the robot 10 itself to move to a targeted person. (See Ishii at col. 3, lines 45-48). While Ishii discusses that a plurality of floating type robots may share information with one another, Ishii fails to disclose, or suggest, that the obtained position information is shared by different robots or transmitted to any other robot. (See Ishii at col. 5, lines 17-22). Thus, Ishii fails to disclose, or suggest, transmitting monitored state variables in addition to a cut out face image, where the monitored state variables comprise a current position of the robot.

Examiner's Response:

As discussed in column 5, lines 17-22, "the floating type robots are communicated with one another, so that the information obtained by respective robots are used commonly as the common information, on the basis of which their movements are scheduled and executed to cooperatively conduct the information supply or the monitoring entirely." This section was not relied upon in the rejection of claim 1 and 10 to teach transmitting the current position of the robot. However, since the information transmitted from one robot to another is the basis for which the movement of the robots are scheduled and executed to cooperatively conduct the information supply or the monitoring entirely, this information must include current position information of other robot in association with the other monitored information in order to provide any meaningful information in the widely monitored area upon which cooperative action and movement planning by the

robots.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et. al. (US 2004/0028260 A1) in view of Kuno (5,467,403) and Ishii (6,278,904).

In Regards to Claims 1 and 10:

Higaki discloses an image transmission system for a mobile robot, comprising:

a camera for capturing an image as an image signal (“employing 2-color CCDs, with L and R denoting the left side camera and the right side camera respectively”, Higaki, paragraph 41; Higaki, Figure 1, 1L and 1R).

a camera for capturing an image as an image signal (Higaki, "camera” Fig. 1, num. 1L and 1R)

human detecting means for detecting a human from the captured image("characteristic features such as the face and the hands of a person can be detected from the extracted outline information", Higaki, paragraph 13; Higaki, Fig.1, num. 58 and 59; Higaki, Fig. 9, S47);

a power drive unit for moving the entire robot toward the detected human ("a drive control section", Higaki, paragraph 41; Higaki, Figure 1, 9);

face identifying means for identifying a position of a face of the detected human (Higaki, Fig. 6, num. S32 "Extract Head Vertex Point" immediately after S31 "Extract Outline")

face image cut out means for cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human("reference symbol 54 denotes an outline extraction section which extracts an outline"; Higaki, Figure 1, 54) ; and

means for monitoring state variables ("the person information map 10 defines the relative position between the person and the autonomous relative position between the person and the autonomous robot R, in order to grasp where the person issuing instructions currently is. The person information map 110 includes: an individual person ID 111 for uniquely specifying persons, a relative position to self 112, a face object ID 113, and individual person ID 114, a posture ID 115, a moving object ID 116, a face position coordinate 118 in the real space, a hand position coordinate 119, a distance to self 120, a relative angle to self 121, an outline contact point coordinate 122, and a

head vertex point coordinate 123", paragraph 87, "the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15", paragraph 88 and "the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15", paragraph 88)

Higaki does not disclose an image transmitting means for transmitting only the cut out portion of the image including the face image to an external t to an external terminal or means for monitoring state variables comprising a current position of the robot and the image transmitting means transmitting the monitored state variables in addition to the cut out face image.

Kuno (5,802,494) teaches an image transmitting means for transmitting only the cut out portion of the image including the face image to an external terminal ("and the signals showing the subject's image are transmitted to a CRT display installed in a monitor room", column 1, lines 60-62, "the image of the subject's head is extracted from the input image (Figure 11A)", column 9, lines 43-44)

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki with an image transmitting means for transmitting a human image to an external terminal taught by Kuno in order to monitor an individual from a

remote location ("The CRT display displays the image of the subject, whereby a physician in the monitor room can observe the subject", Kuno, column 1, lines 22-24)

The combination of Higaki and Kuno does not explicitly disclose means for monitoring state variables comprising a current position of the robot and the image transmitting means transmitting the monitored state variable in addition to the cut out face image.

Ishii does teach means for monitoring state variables comprising a current position of the robot and image transmitting means transmitting the monitored state variable in addition to the cut out face image ("In the first embodiment, the information captured through the image sensor 11 and the audio sensor 12 is used for the purpose of detecting a current position of the robot 10 in order for the robot 10 to move around all objects to be monitored or to monitor a specified object. The information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally through the communications device 19 and stored in an external device, as the monitoring data", column 5, lines 10-15).

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki and Kuno in the discussion above with the means for monitoring state variable comprising a current position of the robot and an image transmitting means transmitting the monitored state variables in addition to the cut out face image as taught by Ishii, in order to be able to observe a predetermined object and keep track of

its location and other state variables of interest ("detecting a current position of the robot 10 in order for the robot to move around all objects to be monitored or to monitor a specified object" and "the information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally through the communications device 19 and stored in an external device, as the monitoring data", Ishii, column 5, lines 10-15).

Regarding claim 3, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the system is adapted to have the robot direct the camera toward the position of the detected human ("obtains the pan angle and tilt angle of the cameras 1L and 1R (step S81). The line of sight instruction section sends the obtained pan angle and the tilt angle to the action control section 9 (step S82). As a result, the cameras 1L and 1R always come to face the direction of the head of the person who issues the instruction "come', it becomes possible to track the person", Higaki, paragraph 94)

Regarding claim 4, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the system further comprises means for measuring a distance to each of a plurality of humans, the human detecting means being provided with means for detecting a human closest to the robot ("a distance calculation device that calculates a distance to the body being the candidate, from distance information of each pixel within the outline in the image", paragraph 12 and

"the movement instruction section 64, based on the moving object data 90, tracks the person who instructed "come" (step S95)", Higaki, paragraph 95; "The robot 5 has several ultrasonic sensors on its trunk. The ultrasonic sensors detect the distances between the robot 5 and the other objects in the sick room. An alarm signal is generated and transmitted to the monitor section 2 when any ultrasonic sensor detects that the robot 5 is too close to any other object.", Kuno, column 30, lines 34-39).

Regarding claim 5, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the mobile robot is adapted to move toward the detected human according to a distance to the detected human (Higaki, Fig. 21, S105 and S107; Higaki, "distance to a person", paragraph 29).

Regarding claim 6, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, further comprising a face database face database that stores images of a plurality of faces and face identifying means for comparing the cut out face image with the faces stored in the face database to identify the cut out face image("Reference symbol 72 denotes a face database in which human facial recognition information is predefined. [0041] The face recognition section 60 picks out only the face part from the color image 81, based on the face position coordinates 105 and 106, and obtains a face feature vector. The face recognition section 60 searches the face database 72 based on the data similar to the obtained feature quantity, and in the case where corresponding face data exists, stores the individual

person ID 104 assigned to the corresponding face data in the memory 8. The generation operation for the 3D object data 100 described here is repeatedly carried out regardless of the other processing status.", Higaki, paragraph 86).

Regarding claim 7, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the face identifying means comprises means for detecting an outline of the detected human, and identifying a face as an area defined under an upper part of the outline of the detected human (Higaki, Fig. 6, num. S32 "Extract Head Vertex Point" immediately after S31 "Extract Outline"; "As can be understood from FIG. 15, in step f1, one of the the local modules processes the video signals representing those pixels near the sides of the rectangle (FIG. 11D), thereby detecting the outline of the subject's head.", Kuno, column 12, lines 12-15).

Regarding claim 8, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the human detecting means is adapted to detect a human as a moving object that changes in position from one frame of the image to another (Higaki, paragraph 50; Higaki, paragraph 44).

Regarding claim 9, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the face image of the detected human occupies a substantially entire area of the cut out portion of the image (Kuno,

"and the signals showing the subject's image are transmitted to a CRT display installed in a monitor room", column 1, lines 60-62, "the image of the subject's head is extracted from the input image (Figure 11A)", column 9, lines 43-44).

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 10 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/814343 in view of Kuno (US 5,802,494).

Claim 1 of copending application 10/814343, while disclosing a camera, a human detecting means, a power drive unit, an image cut out means and an image transmission means does not teach a face identifying means and a face image cut out means and means for monitoring state variables comprising a current position of the robot, the image transmitting means transmitting the monitored state variables in addition to cut out face image.

Kuno teaches a system in the same field of image transmission for a mobile robot, comprising the face identifying means and a face image cut out means and means for monitoring state variables comprising a current position of the robot, the image transmitting means transmitting the monitored state variables in addition to cut out face image.

It would have been obvious to modify claim 1 of application 10/814343 to include a face identifying means and a face image cut out means because the face of a human being is the most identifiable part of a human being and including the rest of the body is unnecessary in that it does not add much additional information that cannot be obtained from viewing solely the face and it would have been obvious to include means for monitoring state variables comprising a current position of the robot and transmitting this information along with the cut out face image as it is in essence the same thing since Kuno's transmission of the face image will indicate both the changing facial expressions (state variables) and the current position of the robot in the room/hospital at

least relative to the patient in order to allow the robot to be navigated remotely by a joystick, which is well-known in the art, and viewing of remotely acquired images including changing state variables (facial expressions) for monitoring and safety purposes, which is also well-known in the art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELISA M. RICE whose telephone number is (571)270-1582. The examiner can normally be reached on 12:00-8:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571)272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elisa M Rice/
Examiner, Art Unit 2624

/Brian P. Werner/
Supervisory Patent Examiner, Art Unit 2624